United States Patent Office 3,497,966
Patented Mar. 3, 1970

3,497,966

TEACHING MACHINE

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Filed Feb. 20, 1967, Ser. No. 618,295
Int. Cl. G09b 7/08
U.S. Cl. 35—9 19 Claims

ABSTRACT OF THE DISCLOSURE

An audio-visual teaching machine providing a set course of instruction projects picture frames onto a viewing screen and may supplement each visual presentation with an audio message. Each frame includes an item of instruction projected onto an upper program area of the screen, background information projected onto a pupil's response area of the screen giving the pupil a multiple choice, and light signals projected off the screen according to a binary code. The pupil's response area is covered by a transparent conductive pattern of which a selected portion overlying the correct choice is activated by the coded light signals so that when the pupil touches a conductive pointer to this portion of the screen the machine will advance to a next item of instruction The coded light signals also determine the mode of operation of the machine, i.e., whether the projector provides a still view of a single frame or a motion picture run and whether the audio machine is operated or not, and if so, whether the audio message is given before or after the pupil's response.

The use of a pupil's response window overlaid with a pattern of transparent conductive segments so that the machine can respond to the touching of a manual conductive-type pointing instrument to the area of the window over the correct answer is broadly shown and claimed in the pending application Ser. No. 547,489 of Thomas J. Gaven, filed May 4, 1966, issued Sept. 17, 1968, now U.S. Patent No. 3,401,470.

An object of the present invention is to provide such pupil's response window in the form of a screen having a rear face onto which is projected the pattern, picture or list from a film or slides to enable the pupil to make a selection or choose an answer to the information or instruction given with the use of a pencil form of conductive pointer.

Another object is to provide such teaching machine wherein there is provided a first viewing screen onto which there is projected the information or instruction and a second viewing screen adapted to serve as the pupil's response window.

Another object is to provide the teaching machine with a single viewing screen on an upper portion of which is shown by rearward projection the information and/or instruction and on the lower portion of which is shown by rearward projection the background choice material and on the outer face of which there is provided a pattern of transparent conductive segments to enable the lower portion to serve as a pupil's response window.

Another object is to provide the film or slides with the necessary code information for coordinating the audio machine with the projector and for activating a particular conductive segment on the pupil's response window for each item of information visually shown.

Another object is to provide such teaching machine which can be preset into different modes of operation including audio information before pupil's response, audio information after pupil's response, visual information only with pupil's response, and motion picture runs with or without audio information.

Another object is to provide the machine with a repeat mechanism which is activated recurrently when the machine is in the audio-before-response mode to keep repeating the audio information if the pupil delays in responding to the visual and audio information given.

Another object is to automatically condition the machine to operate according to a preselected one of the aforestated modes in response to a special code signal from the film or slides.

Another object is to provide the machine with apparatus which when the machine is conditioned for audio before pupil's response will record the audio message on a separate machine which will then play back the message at regular intervals so long at the pupil delays in making a proper response.

Another object is to provide the machine with a lesson repeat mechanism which can be activated as with any mode requiring a pupil's response to repeat both the visual and audio information of the lesson from the beginning if the pupil delays inordinately in making a correct response.

Another object is to activate such lesson repeat mechanism automatically when the pupil has made a predetermined number of inaccurate responses.

Other objects and features of the invention reside in the combinations of parts and details of construction hereinafter particularly described and will become apparent from the following description with reference to the accompanying drawings and from the appended claims.

FIGURE 1 is a side elevational view of a teaching machine according to the invention;

FIGURE 2 is a top plan view of the same machine;

FIGURE 3 is a front elevational view of the same machine;

FIGURE 4 is a view depicting the pattern of the transparent conductive segments and lead-out connector paths on the front face of the pupil's response window;

FIGURE 5 is a view depicting the invisible conductive areas which are left exposed on the front face of a pupil's response window after an insulating transparent glass film is selectively applied thereon;

FIGURE 6 is a schematic circuit diagram of the machine; and

FIGURE 7 is a view of a portion of the film showing a single frame comprising a program area, a pupil's response area and a code signal area.

The present teaching machine comprises a cabinet **10** having an upper section **10***a* housing a projector **11**. A back door **12** can be swung forwardly and upwardly on a hinge **13** to an open position to expose the projector for changing the film cartridge **14**. The projector directs a light beam **15** onto a series of mirrors **16**, **17**, **18** and **19** whereby to project the visual material onto the rear face of a pupil's viewing screen **20**. This viewing screen is inset in a downwardly sloping front wall **21** of a lower section **10***b* of the cabinet. The viewing screen comprises